



FY 2017 Water Supply System Capital Improvement Program

Fiscal Years 2017 Through 2021

Administration

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Nicolette N. Bateson, Chief Financial Officer/Treasurer
William M. Wolfson, General Counsel
Suzanne Coffey, Chief Planning Officer
Cheryl Porter, Chief Operating Officer
Monica Y. Daniels, Manager Capital Management Group

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Executive Management Team

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OVERVIEW

The attached report summarizes the capital planning agenda for the GLWA's Water Supply System. This should be considered a planning document – the Capital Improvement Program (CIP) is a dynamic and evolving plan that requires continual review and modification during the course of each year. The estimates indicated in the early years of the attached report are likely more precise than those in the later years. The project descriptions represent brief synopses of the entire project scope; these descriptions are generally more precise for ongoing active projects than for planned new projects, where specific project activities may have yet to be determined.

DEFINITIONS

Funded Portion of the Programs

The Water System and Sewerage System capital improvement plan covers a five fiscal year horizon. The goal of the Authority's capital financing strategy is to align capital project financing sources with multiple goals including: (a) recovering the costs of capital investment over the useful lives of the capital assets; (b) minimizing the impact of the capital programs on water and sewage rates; and (c) protecting and enhancing the Authority's financial position. The potential funding source identified for each project is subject to change based upon the systems need and financial resources available at the time.

Projected Expenditures Spread by Fiscal Year

In the Water System and Sewerage System capital improvement programs, when project funding requirements are displayed spread by fiscal year, the dollar amount shown for the projects is the estimated expenditures for each fiscal year throughout the life of the projects. This type of presentation identifies the financial requirements.

Project Types

The typical capital project consists of three distinct phases: study, design and construction. In some cases, phases are combined, such as study/design or design/construction. For capital program purposes, each phase is considered a separate project. Generally financing is committed only for the current project phase, and not for any subsequent phases until that phase has been authorized to start. Projects identified as ongoing have been authorized to start by the director and the work is underway. Projects identified as new have not yet started.

Project Detail Sections

Active Project: is a project that has an assigned DRMS number in the financial system, a Notice to Start Work has been issued, had expenditures in the last fiscal year and has projected expenditures of more than \$100,000 in the current fiscal year.

Project On Hold: is a project that may or may not have an assigned DRMS number, experienced expenditures or no expenditures in previous fiscal year(s), and/or has no projected expenditures in the current fiscal year or future fiscal years.

Projects Under Procurement: is a project that has an assigned DRMS number and has not been issued the Notice to Start Work.

Projects Pending Close-out: is a project that has an assigned DRMS number, a Notice to Start Work has been issued, has projected expenditures for the current fiscal year, equal to \$100,000 or less – with no future projected expenditures, and has reached substantial completion.

New Project: is a project that does not have an assigned DRMS number, has a proposal, and has never had expenditures charged to it.

Primary Project Purpose

- 1** – Directly mandated projects (Specific projects mandated by regulatory agencies or court ordered)
- 2** – Projects mandated by regulatory requirements to maintain compliance
- 3** – Projects required to maintain or improve system reliability and/or capacity
- 4** – Projects that utilize technological advances to improve operational efficiency, worker productivity and/or managerial effectiveness
- 5** – Projects required for new service

Funding Eligibility

- RF** -- Revenue Financed
- DE** --- Debt Eligible
- DWRF** - Drinking Water Revolving Fund
- SAWG** - Stormwater, Asset Management, and Wastewater (SAW) Grant
- SAWL** - SAW Loan
- MG** -- Misc. Grant
- TBD** – To Be Determined

Project Types

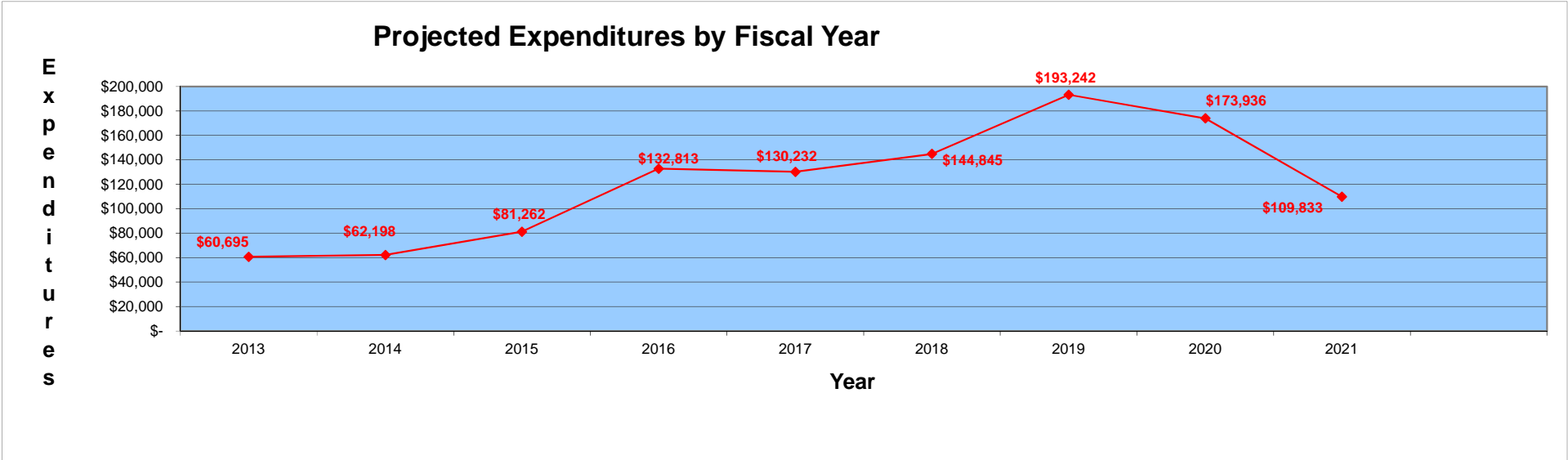
- S** – Study; **S/D** – Study and Design; **S/D/C** – Study, Design and Construction;
- S/D/CA** – Study, Design and Construction Assistance
- D** – Design; **DB** – Design Build; **DBA** – Design Build Assistance;
- D/C** – Design and Construction; **D/CA** – Design and Construction Assistance
- C** – Construction; **CA** – Construction Assistance;
- CM** – Construction Management
- C/CA** – Construction and Construction Assistance
- IT** – Information Technology Systems
- PO** – Purchase Order
- MOU** – Memo of Understanding Agreements (coordination with other municipalities or City of Detroit Departments)

Legend

(1) Costs shown represent the Water Supply System’s portion of the project. Refer to the Sewage Disposal System CIP for project costs financed by the Sewage Disposal System.

Water Supply System C.I.P. Executive Summary
 (000)

Ongoing Projects	*Update		# of Projects	2018	2019	2020	2021	5 Year Sub Total	Remaining	Total
	2016	2017								
Active	42,694	29,133	15	2,805	845	333	333	33,449	-	33,449
Under Procurement	4,634	17,761	14	3,113	1,415	60	-	22,349	-	22,349
Pending Closeout	1,699	1,793	2	-	-	-	-	1,793	-	1,793
On Hold	-	-	1	-	-	-	-	-	2,940	2,940
Ongoing Total	49,027	48,687	32	5,918	2,260	393	333	57,591	2,940	60,531
New Projects Total	17,228	81,545	49	138,927	190,982	173,543	109,500	694,497	123,000	817,497
Total CIP	\$ 66,255	\$ 130,232	81	\$ 144,845	\$ 193,242	\$ 173,936	\$ 109,833	\$ 752,088	\$ 125,940	\$ 878,028



■ Projected Expenditures (FY 2016 and prior amounts included DWSD Wholesale and Retail Operations combined)
 *2016 Update is the updated projected expenditures through June 2016

*For information purposes only. Not counted in the total

Summary of Projected Expenditures Spread by Fiscal Year

**Water Supply System
 Capital Improvement Program**

**Summary of Projected Expenditures Spread by Fiscal Year for Ongoing and New Projects
 (000)**

	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>	<u>Remaining</u>	<u>Total</u>
Plant							
General Purpose	4,701	4,701	425	250	250		10,327
	<u>\$4,701</u>	<u>\$4,701</u>	<u>\$425</u>	<u>\$250</u>	<u>\$250</u>		<u>\$10,327</u>
Facilities							
Water Transmission System	45,137	37,656	62,900	92,250	84,700	113,500	436,143
Computer Systems	3,828	3,748	3,425	1,000	1,050		13,051
	<u>\$48,965</u>	<u>\$41,404</u>	<u>\$66,325</u>	<u>\$93,250</u>	<u>\$85,750</u>	<u>\$113,500</u>	<u>\$449,194</u>
Plant Replacement and Renovation							
General Water Treatment Plant	29,944	37,448	38,936	24,333	10,833	1,500	142,995
Water Works Park	2,475	5,875	27,900	20,500			56,750
Springwells	28,753	28,630	33,000	25,600	10,300	8,000	134,284
Northeast	100	880					980
Southwest	3,853	3,160	2,150	900		2,940	13,003
Lake Huron	6,300	17,278	18,505	6,203	200		48,486
Pumping Stations and Reservoirs	5,141	5,468	6,000	2,900	2,500		22,009
	<u>\$76,566</u>	<u>\$98,740</u>	<u>\$126,491</u>	<u>\$80,436</u>	<u>\$23,833</u>	<u>\$12,440</u>	<u>\$418,507</u>
Ongoing Projects	48,688	5,918	2,259	393	333	2,940	60,532
New Projects	81,545	138,927	190,982	173,543	109,500	123,000	817,497
TOTAL CAPITAL COSTS	<u>\$130,232</u>	<u>\$144,845</u>	<u>\$193,241</u>	<u>\$173,936</u>	<u>\$109,833</u>	<u>\$125,940</u>	<u>\$878,028</u>

A - Active Projects - GLWA

An Active Project is a project that has:

1. an assigned DRMS number
2. been issued the Notice to Start Work
3. had expenditures in the last fiscal year
4. expenditures of more than \$100,000 in the current fiscal year

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

													* For information purposes only. Not counted in Total.							
													Active Projects							
													(000)							
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding						
General Purpose																				
1	Department-wide General Engineering Services on an As-needed Basis (1)	004337	1026 CS-1499 \$ 5,337,500	D	324	175	175	175				525	3	TBD						

Start Date: 05/12/2010 **Completion Date:** 06/02/2018

This project involves designing water main and lateral sewer replacement projects for aging and dysfunctional water mains and sewers throughout the system under different tasks on an as-needed basis. The work also includes civil, structural, architectural, hydraulics, mechanical, electrical, surveying, instrumentation and piping design services.

Water Transmission System

2	Water System Improvements in Joy Road from Southfield Road to Trinity	1350	WS-691	C 5	4,480	0						0	3	TBD
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Start Date: 08/11/2014 **Completion Date:** 08/10/2016

The work consists of replacement of existing distribution mains and existing 24-inch transmissions mains, including gate valve, blow offs, air release valves and other appurtenances in Joy Road from Southfield Freeway to Trinity Road in the City of Detroit. A portion of this work is part of the Retail system (not included in this amount) CIP No. 463

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

														* For information purposes only. Not counted in Total.	
														Active Projects	
														(000)	
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
3 Parallel 42-Inch Main in 24 Mile Road from Rochester Station to Romeo Plank Road	004373	1112	WS-681 \$ 29,738,418	C	13,484	2,367						2,367	3		

Start Date: 04/07/2014 **Completion Date:** 10/09/2016

This project will provide for the installation of approximately 35,650 feet of parallel 42-Inch diameter prestressed embedded concrete cylinder pipe (PCCP) and approximately 1,070 linear feet of 36-inch diameter of PCCP in 24 Mile Road from Rochester Station to Romeo Plank Road. The work will also provide for all interconnections and valves.

4 Replacement of Five (5) PRV Pits of Treated Water Transmission System	004427	1216	DWS-891 \$ 1,849,500	C	644	1,205						1,205	3	
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Start Date: 05/14/2015 **Completion Date:** 01/01/2017

This construction project involves replacing pressure reducing valves (PRVs) and their associated instruments and controls with new at five separate locations, re-constructing the reinforced concrete vaults that house the PRVs, and installing new sump pumping equipment, lighting, and electrical power in each vault. The five locations where the PRVs are being replaced include three locations in the City of Detroit, one in Troy, and one in Garden City.

Computer Systems

5 Consolidated Process Control System Upgrades (1)	004392	1153	PC-773C \$ 4,237,885	DBI	491								3	TBD
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Start Date: 05/25/2013 **Completion Date:** 05/25/2016

This project involves integrating the control and monitoring network throughout all of the facilities with the new SCADA system installed under PC-713. The work includes control system hardware, software, and firmware upgrade or replacement, troubleshooting, installation, start-up, testing, and repair services.

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

													* For information purposes only. Not counted in Total.							
													Active Projects							
													(000)							
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding						
General Water Treatment Plant																				
6	General Engineering Services (1)	004206	1031 CS-1432A	D	287	336	336	336				1,008	3	TBD						
			\$ 7,303,500																	
Start Date:		01/23/2008		Completion Date:		12/12/2018														
<i>This project involves design services for a variety of disciplines including, but not limited to, civil, architectural, structural, geotechnical, hydraulics, mechanical, piping, electrical, and instrumentation in a variety of tasks on an as-needed basis. Further tasks involve one or more facilities including, but not limited to, water treatment plants, water distribution system including booster stations, wastewater treatment plant, wastewater collection system including pumping stations, combined sewer overflow facilities, and administrative and logistical support facilities.</i>																				
7	As-needed CIP Implementation Assistance and Related Services (1)	004217	956 CS-1433	S/D/CM	850	700	217					917	3	TBD						
			\$ 9,913,172																	
Start Date:		03/24/2006		Completion Date:		07/24/2017														
<i>This project provides for multi-discipline Engineering services on an "as-needed basis" to support the Water & Sewer Systems.</i>																				
8	General Engineering Services (1)	004292	1182 CS-1481	D	131	741	772					1,513	3	TBD						
			\$ 6,600,000																	
Start Date:		03/27/2008		Completion Date:		03/27/2018														
<i>This project provides for rapid design turn-around for a variety of small scale projects on an as-needed basis providing multi-disciplinary professional services including meter pit improvement services.</i>																				

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

														* For information purposes only. Not counted in Total.	
														Active Projects	
														(000)	
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
9 As-needed Engineering Services for Concrete Testing, Geotechnical Soil Borings, other Testing Services, and Related Services (1)	004294	1147	CS-1488 \$4,597,850	D/C	535	650	907	333	333	333		2,557	3	TBD	
Start Date: 04/08/2009		Completion Date: 04/08/2018													
<i>The scope of work provides for as-needed engineering services for concrete testing, geotechnical soil borings, and other testing and related services.</i>															
10 Geotechnical and Related Services on an As-Needed Basis (1)	004306	1164	CS-1490 \$ 2,500,000	D	165								3	TBD	
Start Date: 01/14/2010		Completion Date: 01/14/2016													
<i>The work includes consultant services for geotechnical work on as-needed basis. The work also provides for additional engineering/technical services as requested.</i>															
11 Comprehensive Water Master Plan Update	004440	1233	CS-1528 \$ 2,471,543	S	100	290						290	3	TBD	
Start Date: 06/03/2013		Completion Date: 12/31/2016													
<i>Scope of work includes updating of the current Water Master Plan, which will include review of previous/ongoing studies, regulatory mandates under the Clean Water Act/MDEQ, obligations to the customers through the model contract, and policies.</i>															

Springwells

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

														* For information purposes only. Not counted in Total.	
														Active Projects	
														(000)	
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
12 Springwells Water Treatment Plant 1958 Filter Rehabilitation and Auxiliary Facilities Improvements	004100	917	CS-1425 \$ 6,498,479	S/D/CA	335	353	95					448	2	TBD	

Start Date: 01/18/2008 **Completion Date:** 01/18/2018
 Provide study, design, and construction assistance services for the following projects. Project A: Replacement of Phosphoric Acid Feed System. Project B: Rehabilitation of 1958 Filters including HVAC and Architectural updates of 1930 and 1958 Buildings. Project C: Auxiliary Facilities Improvements for 1930 Plant. Project D: Update of existing O & M manuals and preparing On-line Manuals for DWSD web site. Project E: Oversight services for the 1930 plant failed filters. Construction under contract no. SP-563

13 Springwells Water Treatment Plant - 1958 Filter Rehabilitation and Auxiliary Facilities Improvements	004100	917	SP-563 \$ 75,899,000	C	17,200	20,000	215					20,215	2	TBD
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Start Date: 07/08/2013 **Completion Date:** 03/14/2018
 Provide construction services to furnish and install new filter media, underdrains, filter valves, and rate controllers; replace the existing filter control console, hydraulic control valves with electric control valves and enclosures; add appurtenances to enable automatic backwashing of the filters; provide a Filter Aid Polymer System to the 1930 and 1958 filter complexes; install Programmable Logic Controller-based controls for automatic control of the polymer system; and install a local instrumentation and controls system.

Pumping Stations and Reservoirs

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

														* For information purposes only. Not counted in Total.	
														(000)	
														Active Projects	
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
14 Booster Stations and Reservoirs Inspection, Rehabilitation and Inspection Repair Program Management	004297	1170	DWS-874 \$ 13,865,107	PM	3,000	2,316	88					2,404	3	TBD	
Start Date: 07/03/2013		Completion Date: 10/30/2019													
<i>The work provides for all Pumping Stations, study, design, and construction contract documents for rehabilitation and upgrades: management services related to construction, including award of contract, inspection during construction, and furnishing all construction work through provisional allowance for subagreements.</i>															
15 Replacement of Switchgear at Joy Road Pumping Station	004472	1226	DWS-896 \$668,300	C	668	0						0	3	TBD	
Start Date: 03/13/2015		Completion Date: 07/01/2016													
<i>Scope of work includes replacement of the outdoor 4800 volt switchgear at Joy Rd Water Pumping Station.</i>															
					<u>\$42,694</u>	<u>\$29,133</u>	<u>\$2,805</u>	<u>\$845</u>	<u>\$333</u>	<u>\$333</u>	<u>\$0</u>	<u>\$33,449</u>			

UP - Projects Under Procurement

A Project Under Procurement has:

1. an assigned DRMS number
2. not been issued the Noticed to Start Work

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 Projects Under Procurement**

* For information purposes only. Not counted in Total.

(000)

Project Title	DRMS No.	CIP No.	Contract No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Water Transmission System														
1	36-inch Water Main in Telegraph Road	004419	1230	WS-684	C	2,000	7,061					7,061	3	TBD
	<i>This project includes installation of approximately 10,530 feet of 36-inch dia. water main in Telegraph Road from Cherry Hill to Warren Ave.</i>													
2	Water Main Replacement within the City of Detroit - Joy Rd from Greenfield to Schaefer and Davision Ave from Lindwood to Livernois	004493	1351	WS-693	C 6	1,634	1,370	1,106				2,476	3	TBD
	<i>The scope of work also includes approx. 5300 ft. of 24" ductile iron pipe along Joy Rd. A portion of this work is part of the Retail system (amounts not included) CIP No. 463.</i>													
3	48-Inch Water Main Installation at Vining and Wick Roads in Romulus	004848	1230	MOU-4848	C 3	1,000	3,514					3,514	3	TBD
	<i>Placement of 4,000 feet of 48-inch precast embedded cylinder pipe from west of the intersection of Vining and Wick Roads to the DWSD-Wick Road station to accommodate a retail development within the City of Romulus. The City of Romulus will modify paving along Wick Road at Vining as part of the retail development. The new 48-inch pipe will be placed ahead of the paving work by Romulus so that the roadway adjacent to the retail development will not be disturbed by the greater Wick Road water main project.</i>													
General Water Treatment Plant														
4	As Needed Construction Materials, Environmental Media and Special Testing Services, Construction Inspection, and Other Technical Services	004835	1291	CS-1726	S/D/CA		500	500	500			1,500	3	TBD
	<i>This engineering/technical services contract involves as-needed engineering and technical services related to geotechnical investigations and related geotechnical engineering, construction materials sampling and testing, environmental media sampling and testing, soils sampling and testing, land surveying, corrosion testing and inspection, computer-aided design, and construction inspection.</i>													

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 Projects Under Procurement
 (000)**

* For information purposes only. Not counted in Total.

Project Title	DRMS No.	CIP No.	Contract No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Water Works Park														
5 Miscellaneous Concrete and Road Improvements at Waterworks Park WTP	004830	1274	WW-538	C		2,275						2,275	3	TBD
<i>This construction project involves repairing cracked and spalled concrete to stop water leaking from water-containing structures and process units (i.e., filter tanks, sedimentation basins, ozone contactors), re-constructing plant roadways and parking areas that have substantial pavement deterioration, and re-grading and re-paving the administration building parking area to improve drainage.</i>														
Springwells														
6 Steam, Condensate Return, and Compressed Air Piping Improvements at Springwells WTP	004485	1307	CS-1671	D/CA		100	120	250				470	3	TBD
<i>This engineering services contract involves designing a new, more energy-efficient steam heating system for the entire Springwells Water Treatment Plant, including all steam unit heaters, steam piping, condensate return piping, condensate return pumping stations, steam pressure reducing valves, and appurtenances. This project also involves replacing the compressed air piping in the plant used for service air.</i>														
7 Miscellaneous Concrete Improvements at Springwells WTP	004831	1265	SP-570	C		600						600	3	TBD
<i>This construction project involves repairing cracked and spalled concrete to stop water leaking from water-containing structures, to stop water from migrating into buildings and tunnels, and to repair deteriorated concrete where substantial delamination has occurred. The project also involves re-grading and re-constructing a plant roadway over pedestrian and utility tunnels to protect these tunnels from water infiltration and damage.</i>														

Northeast

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 Projects Under Procurement**

* For information purposes only. Not counted in Total.

		(000)												Primary Project Purpose	Funding
Project Title	DRMS No.	CIP No.	Contract No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total			
8	Low Lift Pumping Plant Caisson Rehabilitation at Northeast WTP	004846	1273	CS-1744	D/C		100	80				180	3	TBD	
	<i>The work includes design and repair of concrete cracks and concrete restoration to stop leakage on the concrete covers of the encased steel beams and along the inner surfaces of the caisson wall.</i>														
Southwest															
9	Residual Handling Facility's Decant Flow Modifications at Southwest WTP	004834	1297	CS-1730	D		641					641	3	TBD	
	<i>The work includes design of modifications necessary to eliminate the solids handling recycle flows from the raw water sample location serving the Southwest WTP.</i>														
Lake Huron															
10	Replacement of Filter Instrumentation and Raw Water Flow Metering Improvements at Lake Huron WTP		1300	CS-1771	D		200	400	410	60		1,070	3	TBD	
	<i>The work includes design services for: replacing filters instrumentation, loss of head, effluent flow transmitter, sample piping and for the raw water conduit venturi flow metering - verify sample lines, their origin; and clean out; replace piping and pressure transmitters; replace instrumentation to measure flow.</i>														
11	Miscellaneous Concrete Improvements at the Lake Huron WTP	004827	1299	LH-397	C		600	323				923	3	TBD	
	<i>This construction project involves repairing cracked and spalled concrete to stop water leaking from water-containing structures, to stop water from migrating into buildings, and to repair deteriorated concrete where substantial delamination has occurred.</i>														
12	Miscellaneous Mechanical Improvements at Lake Huron WTP	004833	1280	CS-1732	D/CA		200	350	255			805	3	TBD	
	<i>The work includes replacement of the existing Natural Gas-Fired hot water boilers, back flow preventers, and dehumidification units with related accessories.</i>														

Pumping Stations and Reservoirs

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 Projects Under Procurement
 (000)**

* For information purposes only. Not counted in Total.

Project Title	DRMS No.	CIP No.	Contract No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
13 Springwells Water Treatment Plant Service Area Redundancy Study		1295	CS-1772	S		450						450	3	TBD	
<i>This study project involves hydraulic analyses and evaluation of options to transmit finished water from the Lake Huron Water Treatment Plant through the West Service Center in order to provide finished water to the Springwells Water Treatment Plants high-pressure district.</i>															
14 Pressure and Control Improvements at 004850 the Electric, Ford Road, Michigan, and West Chicago Water Booster Pumping Stations		1293	CS-1749	D/CA		150	234					384	3	TBD	
<i>The work involves designing variable speed pumping equipment and controls on line and reservoir pumping units to better match water demands.</i>															
						<u>\$4,634</u>	<u>\$17,761</u>	<u>\$3,113</u>	<u>\$1,415</u>	<u>\$60</u>	<u>\$0</u>	<u>\$0</u>	<u>\$22,349</u>		

PC - Projects Pending Close-Out

A Project Pending Close-Out is a project that has:

1. an assigned DRMS number
2. been issued the Notice to Start Work
3. been substantially completed
4. project expenditures for the current fiscal year equal to \$100,000 or less - with no projected expenditures

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

Projects Pending Close-out

* For information purposes only. Not counted in Total.

Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
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Computer Systems

1	Data Center Reliability/Availability Improvements (1)	004366	1206	DWS-881	DB	184	0					0	4	TBD
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\$ 2,862,425

Start Date: 01/29/2013 **Completion Date:** 02/27/2016

The scope of work consists of designing and building data centers, which will provide system improvements for both power and uninterruptible power supply systems, environmental service, fire protection, structural wiring, and monitoring. This includes the System Control Center, Water Board Building, Switch Room Central Services Facility, Switch Room WWTP-NAB-B1, Data Center Central Service Facility - IS-226, and Data Center WWTP-K303.

2	SCADA Radio Network Upgrade (1)	004368	1207	DWS-882	DB	637							3	TBD
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\$ 2,862,425

Start Date: 03/26/2013 **Completion Date:** 03/26/2016

The scope of work consists of installing and upgrading the Department's new SCADA Radio network including low voltage wiring, radio wiring and cable, data connections, antenna mounting and connections, instrument wiring, network wiring, and fiber networks. It also includes system improvements and planning, system and material procurement in support of the activities required for completing each task.

Southwest

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year**

Projects Pending Close-out

* For information purposes only. Not counted in Total.

		(000)											Primary Project Purpose	Funding
Project Title	DRMS No.	CIP No.	Contract No./ Contract Amount	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total		
3 Southwest Water Treatment Plant, Sludge Treatment & Waste Washwater Treatment Facilities	003466	262	SW-548 \$ 49,680,368	C	300	1,793						1,793	2	TBD

Start Date: 05/12/2010 **Completion Date:** 07/03/2015

This project involves the continuous sludge removal from the settling basins and filter waste Backwash Water Treatment with coagulation, flocculation, sedimentation and thickening, and removal of alum sludge to the Treatment Facilities. The effluent flow will be monitored and sampled prior to the Sexton-Kilfoil drain.

Pumping Stations and Reservoirs

4 Wick Road Station Rehabilitation	004224	1047	DWS-858 \$ 13,699,409	DB	578								3	TBD
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Start Date: 11/25/2008 **Completion Date:** 06/30/2016

This project provides for the design, furnishing, installing, and testing of a new building. The work also provides for transformers, switchgear, variable frequency drives, starters, motors, pumps, heating, cooling and ventilation, lighting, controls, power monitoring, ovation system modifications, fire alarm, security, and training. This project further provides for complete documentation of installed system and revised O & M manuals.

\$1,699	\$1,793	\$0	\$0	\$0	\$0	\$0	\$1,793
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H - Projects On Hold

A Project On Hold is a project that has:

1. an assigned DRMS number
2. experienced expenditures prior to the last fiscal year
3. experienced no expenditures in the last fiscal year and/or no projected expenditures in the current fiscal year

Water Supply System
Capital Improvement Program
Projected Expenditures Spread by Fiscal Year
Projects On Hold
(000)

Project Title	DRMS No.	CIP No.	Contract No.	Type	2016 - 17	2017 - 18	2018 - 19	2019 - 20	2020 - 21	Remaining	Total	Primary Project Purpose	Allocation Status
Southwest													
1 Replacement of Butterfly Valves and Sluice Gates for Rapid Mix Chamber at Southwest WTP		1283		S/D/C						2,940	2,940	2	CTA
<i>The work includes study, design, and construction services for the replacement of 2 - 72 inch dia butterfly valves, 4 motorized sluice gates, 7 potable sluice gates, and 1 - 36 inch flag valve.</i>													
					\$0	\$0	\$0	\$0	\$0	\$2,940	\$2,940		

N - New Projects

A New Project is a project that:

1. does not have an assigned DRMS number
2. has a proposal
3. has never had expenditures charged against it

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
General Purpose														
1 Vehicle, Heavy Equipment and Equipment Purchases			1328	C	1,600	4,526	4,526	250	250	250		9,802	4	TBD
<i>This is an allowance for planned and unplanned equipment replacement, vehicles, and heavy equipment.</i>														
Water Transmission System														
2 Water Transmission Improvement Program		2010	1230	D/C	3,375	6,205	10,000	10,000	10,000	10,000		46,205	3	TBD
<i>This project is a yearly funding allocation for the design and/or construction work for the rehabilitation or replacement/construction of aging water transmission lines and all appurtenances, connections and related structures.</i>														
3 Park-Merriman Water Main-Final Phase	WS-699		1230	C 2		1,000	1,800	2,200				5,000	3	TBD
<i>Work includes the placement of a new 24-inch ductile iron water main from Venoy and Glenwood Road east to Merriman Road and south to connect to the Michigan Avenue pumping station.</i>														
4 Suburban Water Meter Pit Rehabilitation and Meter Replacement		2014	1303	D/C	500	4,000	4,000	4,000	4,000	4,000		20,000	4	TBD
<i>The scope of work includes replacements of suburban water meters and rehabilitation of meter pits and related items.</i>														

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
5 New Waterworks Park to Northeast Transmission Main <i>This project involves the design and construction of a new water transmission main between the Waterworks Park (WWP) and Northeast (NE) Water Treatment Plants, improvements to the WWP high-lift pumping station to convey a minimum of 150 mgd of finished water from WWP to NE</i>		2014	1305	S/D/C			6,900	29,600	48,300	32,000	13,200	130,000	3	TBD
6 96-inch Main Relocation, Isolation Valves Installations, and New Parallel Main <i>Relocate a portion of the existing 96-inch main, install new isolation valves on the 96-inch main, and install a smaller main parallel to the 96-inch main between Romeo and Rochester Station.</i>		2016	1321	S/D/C			1,100	3,200	13,500	27,300	93,900	139,000	3	TBD
7 Transmission System Water Main Work - Replacement of Schoolcraft Water Main <i>Design work of an new 48-inch transmission main along I-96 under the freeway service drive. Due to excessive breaks the Schoolcraft water main in the Redford/Livonia will be replaced. The purpose is to improve the transmission system reliability/redundancy.</i>		2016	1323	C				7,300	7,250			14,550	3	TBD
8 Transmission System Water Main Work-Wick Road Parallel Water Main <i>Construction of the new 48-inch transmission main along a principal roadway in Romulus. The purpose is to improve the transmission system reliability/redundancy.</i>		2016	1324	C		10,000	9,350					19,350	3	TBD

Water Supply System
Capital Improvement Program
Projected Expenditures Spread by Fiscal Year
New Projects
(000)

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
9 Design and Construction of a new Newburgh Road 24" Main along Newburgh Road between Cherry Hill and Glenwood Avenue <i>Placement of a new 24-inch ductile iron water main from Venory and Glenwood Rd to east Merriman Rd and south to connect to the Michican Avenue pump station. This project provides a second transmission feed to the Michigan Avenue branch system.</i>		2016	1326	D/C		1,000	1,800	2,200				5,000	3	TBD
10 Pennsylvania, Springwells and Northeast Raw Water Supply Tunnel Improvements based on Contract CS-1623 Inspection Results <i>Improvement and rehabilitation to the Springwells, Northeast and Pennsylvania raw water tunnels to maintain the structural integrity of the raw water supply system. Needed for Northeast WTP repurposing.</i>			1327	D/CA/C			1,500	3,900	9,200	11,400	6,400	32,400	3	TBD
11 Downriver Transmission System Needs Assessment <i>The proposed study will identify the needed system upgrades in order to provide redundancy through the use of distribution mains within the customer communities.</i>		2016	1333	S		400	100	500				1,000	3	TBD
12 Lapeer County Chlorine Booster Stations and Isolation Valve for 72-inch Transmission Main <i>This project involves the design/build construction of two chlorine booster stations to boost chlorine along the 72-inch transmission main. It also involves the construction of an isolation valve to isolate stagnant water between meters. This work is needed when the City of Flint and Genesee County leave the GLWA. The serving area is the City of Lapeer, Mayfield Twp and Imlay City.</i>		2016	1355	DB		7,015						7,015	3	TBD

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Computer Systems														
13 IT Systems Allowance (1)		2013	1262	DB	1,500	3,828	3,748	3,425	1,000	1,050		13,051	4	TBD
<i>This is an allowance for the procurement of IT equipment or services for the replacement or upgrade of the department's computer systems, software licensing, and related IT items.</i>														
General Water Treatment Plant														
14 Water Treatment Plant /Pump Station Allowance		2012	1256	D/C	6,753	19,660	19,650	20,000	20,000	10,000		89,310	2	TBD
<i>This is an allowance for unplanned critical projects, equipment replacement/rehabilitation, critical asset replacement, energy saving projects, etc. at the Water Treatment Plants, Pump Stations and other Water Operation Facilities.</i>														
<i>This allowance also includes estimated amount for the repurposing and/or reducing capacities of the Water Treatment Plants per the recommendation of the Water Master Plan Study team.</i>														
15 Springwell Reservoir Fill Line		2016	1256	D/CA		100	3,400	4,000				7,500	3	TBD
<i>This project involves the construction of a new pipeline and control valve to fill the finished water reservoirs at the Springwells Water Treatment Plant.</i>														
16 Roofing Systems Replacement at Water Plants and Booster Pump Stations		2014	1279	S/D/C	3,000	3,000	3,000	3,000	2,500			11,500	3	TBD
<i>The work includes, but is not necessarily limited to, the removal and replacement of existing built-up, membrane, metal , and shingle type roofs, including all accessories such as flashing, expansion joints, coping, etc. The sites covered by this project are located at water treatment plants and booster pump stations throughout southeastern Michigan.</i>														
<i>A condition assessment of the existing roofing systems is being conducted to identify these roofs requiring replacement over the next 10 years and an associated budget.</i>														

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
17 Miscellaneous Improvements to Raw Water Tunnels, Shafts and Related Structures <i>The work includes rehabilitation and repair improvements to the raw water system, deemed necessary during the condition assessment project (a separate contract) to protect the structural integrity of raw water system at Belle Isle, Southwest, Lake Huron.</i>		2014	1292	D/CA/C			500	1,000	1,000		1,500	4,000	3	TBD
18 West Service Center/Duval Rd Division Valve Upgrades <i>This project involves replacement of control valves at the West Service Center and at Duval Road to improve pressure control to feed the Springwells service area from the Lake Huron Water Treatment Plant.</i>		2017	1336	S/D/C			4,200	7,600				11,800	3	
19 Energy Management: Electric Metering Improvement Program <i>This program will increase the number of electric meters at pumping stations and treatment facilities to allow for active demand management to reduce electricity rates. The meters can be tied to the existing data management system for data archiving and use.</i>			1343	S/D/C		500	500	500	500	500		2,500	4	TBD
20 Energy Management: West Service Center (WSC) VFD Installation <i>Scope of work includes design and installation of the variable frequency drive for the line pump 1 and line pump 4.</i>			1347	S/D/C	500	1,667	1,667	1,667				5,000	3	TBD
21 Security Infrastructure Improvements <i>Implement recommendations of GLWA security vulnerability assessments □ Security systems for the Belle Isle Intake. Security systems for all Water and Wastewater Plants chlorine storage and handling facilities. Enhance perimeter security and at all water plants. Replace analog video cameras systems to digital cameras systems at all GLWA facilities.</i>		2016	1354	D/C		1,800	1,800					3,600	4	TBD

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Water Works Park														
22 Yard Piping, Valves and Venturi Meters Replacement at Water Works Park		2007	1166	S/D/C			5,500	27,900	20,500			53,900	2	TBD
<i>The work provides study, design and construction for the replacement of yard piping from 24 inch to 72 inch in diameter, pressure reducing valves improvements, replacing venturi meters, water supply valves, 48 inch High Lift Pump Station (HLPS) suction gate valves, discharge header isolation valves and reburbing valve manholes. The work also provides for other miscellaneous improvements. This project is being re-evaluated. Changes in scope, cost and schedule are likely.</i>														
23 Comprehensive Condition Assessment at Waterworks Park WTP		2014	1301	S		200	375					575	3	TBD
<i>The work includes determining the physical condition of all the structures (except roofing system and the reservoirs) in the plant like the High Lift Pump Station, Administration Building, Water Quality Building, Auxiliary Low Lift Pump Station, Screen House, Raw Water Booster Station and other plant facilities.</i>														

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Springwells														
24 Springwells Water Treatment Plant - Low Lift and High Lift Pump Station		2004	1071	S/D/C/A/C		1,000	15,000	25,000	11,000			52,000	3	TBD
<i>This construction project involves replacing the low-lift and high-lift pumps, motors, switchgear, motor controls, and instrumentation with new, equipping certain motors with variable speed drives; replacing the ventilating system that serves the low- and high-lift pump station building and switch house; replacing the dehumidifying system that serves the high-lift header vault, and replacing exterior windows with energy-efficient windows. This project is being re-evaluated to consider recommendations of the 2015 Water Master Plan Update. Change in scope, schedule and budget are likely.</i>														
25 Water Production Flow Metering Improvements at NE, SW, and SPW WTP		2014	1264	C		1,500	8,300	2,100	1,000			12,900	2	TBD
<i>The work consists of rehabilitation of all the venturi meters to accurately measure water production flows from the plant. The rehabilitation includes structure as well as the instrumentation and control. Formally CIP No.'s 1275, 1276, 1278 now all combined.</i>														
26 Administration Building Improvements at Springwells WTP		2014	1266	S/D/C				300	1,700			2,000	3	TBD
<i>The work includes, but not necessarily limited to, removal and replacement of the existing plumbing piping, fittings, valves, plumbing fixtures, and any other necessary accessories. The work also includes relocating the electrical gear from basement to first floor locker room.</i>														
27 Replacement of Rapid Mix Units at Springwells WTP 1958 Process Train		2014	1267	D/C		200	700	100				1,000	3	TBD
<i>The work includes removal and replacement of all the four (4) rapid mixers including electrical, mechanical and structural components.</i>														

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
28 Powdered Activated Carbon System Improvements at Springwells WTP <i>The work includes improvements to the existing Powdered Activated Carbon System (PAC).</i>		2014	1268	S/D/C					900	2,000		2,900	2	TBD
29 1930 Sedimentation Basin Sluice Gates, Guides & Hoists Improvements at Springwells WTP <i>The work includes rehabilitation and or replacement of 1930 sedimentation basin influent and effluent cast iron gates/guides (8 nos.), mono rail electrical trolley and hoist (4 nos.), and other miscellaneous improvements including heating, electrical and structural to all the four gate houses.</i>		2014	1269	S/D/C			1,200	2,000	4,000	300		7,500	2	TBD
30 Yard Piping Improvements at Springwells WTP <i>This project includes yard piping improvements at Springwells WTP. Formerly CIP #1248</i>		2012	1306	S/D/C				2,000	7,000	8,000	8,000	25,000	3	TBD
31 Steam, Condensate Return, and Compressed Air Piping Improvements at Springwells WTP <i>This project is to replace the leaking steam piping, condensate return piping and associated system at various places throughout the Springwells WTP. The scope of work also includes non-functional pressure reducing valves, regulators and associated system for air compressor piping at various places in the plant. Formerly CIP #1248.</i>		2012	1307	C		2,000	3,000	1,250				6,250	3	TBD
32 Springwells Water Treatment Plant 1930 Filter Building-Roof Replacement <i>Removal and replacement of the existing built up roof, flashings, drains and all accessories necessary at the Springwells Water Treatment Plant 1930 Filter Building.</i>		2016	1320	D/C		3,000						3,000	3	TBD

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Northeast														
33 Yard Piping Replacement at Northeast Water Treatment Plant		2014	1272	D/C			800					800	3	TBD
<i>The work includes providing and installing water main, new state fair valve and bulk heads.</i>														
Southwest														
34 High Lift Pump Discharge Valve Actuators Replacement at Southwest WTP		2014	1277	D/C		160	160	900	900			2,120	2	TBD
<i>The work includes demolition of the hydraulic oil based actuator system, and installation of a new actuator system that will open and close the discharge valves at slow speed to avoid any water hammer effects in the transmission mains of the Southwest WTP's service area.</i>														
35 Residual Handling Facility's Decant Flow Modifications at Southwest WTP		2014	1297	D/C		1,259	3,000	1,250				5,509	3	TBD
<i>The work includes modifications necessary to eliminate the solids handling recycle flows from the raw water sample location serving the Southwest WTP.</i>														
Lake Huron														
36 Energy Management: Lake Huron Water Treatment Plant Low Lift Pumping Improvements		2010	1227	D/C		200	2,500	3,000				5,700	3	TBD
<i>Designing, bidding and constructing the replacement of one or more low lift pumps and motors, and equipping one or more low lift pumps with variable flow control measures to better match station pumping demands with pumping unit capacities.</i>														

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
37 Energy Management: Miscellaneous Mechanical Improvements at Lake Huron WTP <i>The work includes replacement of the existing Natural Gas-Fired hot water boilers, back flow preventers, and dehumidification units with related accessories.</i>			1280	C			400	950	950	200		2,500	3	TBD
38 Evaluation of Flocculation Improvement Alternatives at the LHWTP <i>The scope of work is to identify and evaluate alternative flocculation technologies that do not require the long shafts that are currently in place, and/or alternative flocculator shaft bearings that have proven successful and reliable in this type of installation and these conditions.</i>		2014	1289	S			125					125	2	TBD
39 Electrical Tunnel Rehabilitation at Lake Huron WTP <i>The work includes rehabilitative structural/concrete work that includes repairing damaged concrete, reconstruction of the southeast corner of the tunnel and replacement of damaged cables, cable trays, duct banks etc.</i>		2014	1298	C			1,000	3,000	1,600			5,600	3	TBD
40 Replacement of Filter Instrumentation and Raw Water Flow Metering Improvements at Lake Huron WTP <i>The construction work involves replacement of instrumentation and controls for the filtration process, raw water flow metering and finished water production flow metering.</i>		2014	1300	C		5,000	11,180	7,390	1,060			24,630	3	TBD

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
41 Lake Huron WTP-Raw Sludge Clarifier and Raw Sludge Pumping System Improvements		2016	1318	S/D/C		100	1,000	3,500	2,533			7,133	3	TBD

This project will provide a study and design on the structural integrity, capacity and performance requirements for pumps and piping to meet maximum design flows. The construction services will re-construct the clarifiers, piping and pumps to meet the design capacity.

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding
Pumping Stations and Reservoirs														
42	Isolation Gate Valves for Line Pumps for West Service Center Pumping Station	2014	1270	D/C			521	1,000				1,521	3	TBD
	<i>The work includes removal of existing three (3) resilient seated gate valves and installation of three (3) new metal seated gate valves on pumps L4, L5 and L6. The work also includes installation of three (3) new metal seated gate valves on pumps L1, L2, and L3. The gate valves are on the downstream side of the cone valves.</i>													
43	Hydraulic Surge Control for North Service Center Pumping Station	2014	1271	S		200						200	3	TBD
	<i>The work includes the study of a hydro-pneumatic surge tank system, pressure indicating transmitters for monitoring hydraulic transients, and other related accessories.</i>													
44	Hydraulic Surge Control for North Service Center Pumping Station	2014	1271	D/C			500	2,000	100			2,600	2	TBD
	<i>The work includes design and installation of a hydro-pneumatic surge tank system, pressure indicating transmitters for monitoring hydraulic transients, and other related accessories.</i>													
45	Energy Management: Evaluate Alternatives and Recommend Corrective Actions to Improve Power Factors (PF) at Various GLWA Booster Pumping Stations	2014	1288	S		125	125					250	3	TBD
	<i>The scope of work for this project is to evaluate the available alternatives to correct the power factor at the selected booster pumping stations and recommend the most cost effective and reliable solution to increase the power factors above 85%.</i>													

**Water Supply System
 Capital Improvement Program
 Projected Expenditures Spread by Fiscal Year
 New Projects
 (000)**

Project Title	Contract No.	Year Added	CIP No.	Type	Update* 2016	2017	2018	2019	2020	2021	Remaining	Total	Primary Project Purpose	Funding	
46 Energy Management: Freeze Protection Pump Installation at Imlay Pumping Station <i>The work includes furnishing and installation of a freeze protection pump, motor and associated valves, fittings, and electrical and control monitoring systems.</i>		2014	1294	D/C			200	500	300			1,000	3		
47 Needs Assessment Study for all Water Booster Pumping Stations <i>The work includes a comprehensive needs assessment and hydraulic modeling to determine future station capacities for the nineteen (19) water booster pumping station facilities. Study will include assessment of existing condition and providing list of improvements, upgrading the following items: Facility HVAC and Lighting, Pumping System, Electrical Switch Gear, Instrumentation, Control and Ovation, Fire Protection and Alarms, etc.</i>		2014	1296	S		500	1,200					1,700	3	TBD	
48 Reservoir Inspection, Design and Rehabilitation at Imlay Station, Adams Station, Haggerty Station, LH-WTP, SP-WTP and SW-WTP <i>Complete the routine inspection, design and rehabilitation of reservoirs to maintain system reliability.</i>		2016	1325	S/D/C		1,000	2,500	2,500	2,500	2,500		11,000	3	TBD	
49 Study Phase Services for Proposed East Service Center Booster Pumping Station and Reservoir <i>This study will provide an evaluation of alternatives to improve redundancy and capacity within the 24-Mile Road branch of the transmission system.</i>		2015	1334	S		400	100					500	3	TBD	
						<u>\$17,228</u>	<u>\$81,545</u>	<u>\$138,927</u>	<u>\$190,982</u>	<u>\$173,543</u>	<u>\$109,500</u>	<u>\$123,000</u>	<u>\$817,497</u>		